understood, however, that the drawings are intended solely for purposes of illustration and not as a definition of the limits of the invention, for which reference should be made to the appended claims.--

On page 21, after line 16 (last line), insert the following as a new paragraph:

--Thus, while there have been shown and described and pointed out fundamental novel features of the present invention as applied to a preferred embodiment thereof, it will be understood that various omissions and substitutions and changes in the form and details of the devices described and illustrated, and in their operation, and of the methods described may be made by those skilled in the art without departing from the spirit of the present invention. For example, it is expressly intended that all combinations of those elements and/or method steps which perform substantially the same function in substantially the same way to achieve the same results are within the scope of the invention. Substitutions of elements from one described embodiment to another are also fully intended and contemplated. It is the intention, therefore, to be limited only as indicated by the scope of the claims appended hereto.--

On page 21, line 1, delete "Claims" and insert therefor --What is claimed is:--.

<u>In the Claims</u>:

Amend claims 4, 7, 8, 10-12, 14-17, 20-22, 25, 27, 29 and 30 to read as follows:

4. A method according to claim 1, wherein said second diversity transmission scheme is a frequency or time diversity scheme.

7. A method according to claim 5, wherein an original signal constellation represented as a matrix is used, and wherein each row of said matrix corresponds to a point in a multidimensional constellation.

8. A method according to claim 6, wherein said orthonormal transformation is achieved by a multiplication with a complex matrix.

10. A method according to claim 8, wherein said complex matrix is obtained based on an upperbound on the symbol error rate or based on a cutoff rate.

11. A method according to claim 1, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

12. A method according to claim 1, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

14. A method according to claims 1, wherein said wireless communication system is a WCDMA system.

15. A method according to claim 1, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

16. A method according to claim 1, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

17. A method according to claim 1, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

20. A transmitter according to claim 18, wherein said second diversity transmission scheme is a time or frequency diversity transmission scheme using a plurality of time slots or carrier frequencies.

21. A transmitter according to claim 18, wherein said transforming means comprises a complex diversity transformation unit (11) arranged for performing an orthonormal transformation to constellation which preserves Euclidean distances.

22. A transmitter according to claim 18, wherein said transmitter is arranged in a WCDMA base station.

25. A receiver according to claim 23, wherein said first diversity transmission scheme is a space diversity transmission scheme.

27. A receiver according to claim 23, wherein said second diversity scheme is a time or frequency diversity scheme.

29. A receiver according to claim 23, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

30. A receiver according to claim 23, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

Add the following new claims:

31. A method according to claim 2, wherein said second diversity transmission scheme is a frequency or time diversity scheme.

32. A method according to claim 3, wherein said second diversity transmission scheme is a frequency or time diversity scheme.

33. A method according to claim 6, wherein an original signal constellation represented as a matrix is used, and wherein each row of said matrix corresponds to a point in a multidimensional constellation.

34. A method according to claim 7, wherein said orthonormal transformation is achieved by a multiplication with a complex matrix.

35. A method according to claim 9, wherein said complex matrix is obtained based on an upperbound on the symbol error rate or based on a cutoff rate.

36. A method according to claim 2, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

37. A method according to claim 3, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

38. A method according to claim 4, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

39. A method according to claim 5, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

40. A method according to claim 6, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

41. A method according to claim 7, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

42. A method according to claim 8, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

43. A method according to claim 9, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

44. A method according to claim 10, wherein said diversity transmission method is used in a downlink transmission of a cellular network.

45. A method according to claim 2, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

46. A method according to claim 3, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

47. A method according to claim 4, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

48. A method according to claim 5, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

49. A method according to claim 6, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

50. A method according to claim 7, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

51. A method according to claim 8 wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

52. A method according to claim 9, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

53. A method according to claim 10, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

54. A method according to claim 11, wherein said transmission signal is a bit stream and said plurality of subsignals are substreams.

55. A method according to claim 2, wherein said wireless communication system is a WCDMA system.

56. A method according to claim 3, wherein said wireless communication system is a WCDMA system.

57. A method according to claim 4, wherein said wireless communication system is a WCDMA system.

58. A method according to claim 5, wherein said wireless communication system is a WCDMA system.

59. A method according to claim 6, wherein said wireless communication system is a WCDMA system.

60. A method according to claim 7, wherein said wireless communication system is a WCDMA system.

61. A method according to claim 8, wherein said wireless communication system is a WCDMA system.

62. A method according to claim 9, wherein said wireless communication system is a WCDMA system.

63. A method according to claim 10, wherein said wireless communication system is a WCDMA system.

64. A method according to claim 11, wherein said wireless communication system is a WCDMA system.

65. A method according to claim 12, wherein said wireless communication system is a WCDMA system.

66. A method according to claim 13, wherein said wireless communication system is a WCDMA system.

67. A method according to claim 2, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

68. A method according to claim 3, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

69. A method according to claim 4, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

70. A method according to claim 5, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

71. A method according to claim 6, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

72. A method according to claim 7, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

73. A method according to claim 8, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

74. A method according to claim 9, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

75. A method according to claim 10, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

76. A method according to claim 11, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

77. A method according to claim 12, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

78. A method according to claim 13, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

79. A method according to claim 14, wherein said first and second diversity transmission schemes comprise at least one of an open loop and a closed loop system.

80. A method according to claim 2, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

81. A method according to claim 3, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

82. A method according to claim 4, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

83. A method according to claim 5, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

84. A method according to claim 6, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

85. A method according to claim 7, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

86. A method according to claim 8, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

87. A method according to claim 9, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

88. A method according to claim 10, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

89. A method according to claim 11, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

90. A method according to claim 12, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

91. A method according to claim 13, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

92. A method according to claim 14, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

93. A method according to claim 15, wherein time slots of frequency carriers used in said second diversity transmission scheme are spaced apart to such a degree that independent fading is assured.

94. A method according to claim 2, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

95. A method according to claim 3, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

96. A method according to claim 4, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

97. A method according to claim 5, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

98. A method according to claim 6, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

99. A method according to claim 7, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

100. A method according to claim 8, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

101. A method according to claim 9, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

102. A method according to claim 10, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

103. A method according to claim 11, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

104. A method according to claim 12, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

105. A method according to claim 13, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

106. A method according to claim 14, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

107. A method according to claim 15, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

108. A method according to claim 16, wherein said transmission signal comprises a signal constellation generated by optimizing the bit error rate and the peak to average ratio for a Rayleigh fading channel.

109. A transmitter according to claim 19, wherein said second diversity transmission scheme is a time or frequency diversity transmission scheme using a plurality of time slots or carrier frequencies.

110. A transmitter according to claim 19, wherein said transforming means comprises a complex diversity transformation unit (11) arranged for performing an orthonormal transformation to constellation which preserves Euclidean distances.

111. A transmitter according to claim 20, wherein said transforming means comprises a complex diversity transformation unit (11) arranged for performing an orthonormal transformation to constellation which preserves Euclidean distances.

112. A transmitter according to claim 19, wherein said transmitter is arranged in a WCDMA base station.

113. A transmitter according to claim 20, wherein said transmitter is arranged in a WCDMA base station.

114. A transmitter according to claim 21, wherein said transmitter is arranged in a WCDMA base station.

115. A receiver according to claim 24, wherein said first diversity transmission scheme is a space diversity transmission scheme.

116. A receiver according to claim 24, wherein said second diversity scheme is a time or frequency diversity scheme.

117. A receiver according to claim 25, wherein said second diversity scheme is a time or frequency diversity scheme.

118. A receiver according to claim 26, wherein said second diversity scheme is a time or frequency diversity scheme.

119. A receiver according to claim 24, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

120. A receiver according to claim 25, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

121. A receiver according to claim 26, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

122. A receiver according to claims 27, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

123. A receiver according to claim 28, wherein said transmission signal is a QPSK signal and said receiving means comprises a bank of 2M correlators, wherein M denotes the number of transmission antennas used in said first diversity transmission scheme.

124. A receiver according to claim 24, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

125. A receiver according to claim 25, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

126. A receiver according to claim 26, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

127. A receiver according to claim 27, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

128. A receiver according to claim 28, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.

129. A receiver according to claim 29, wherein said receiver is arranged in a mobile WCDMA terminal of cellular network.